MATERIAL SAFETY DATA SHEET — 16 Sections

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier HPL—2			[WHMIS Classification]
Product Use Search and rescue for helicopter personnel			
Manufacturer's Name Simpro		Supplier's Name Hansen Protection AS	
Street Address Industriveien 4		Street Address Tykkemyr 27	
City Løkken Verk	Province Sør-Trøndelag	City Moss	Province Østfold
Postal Code 7332	Emergency Telephone +47 72 49 72 30	Postal Code 1597	Emergency Telephone +47 69 00 13 00
Date MSDS Prepared 2015-03-23	MSDS Prepared By Erik Hardeng / Torjus Færsnes	Phone Number +47 92 84 65 99 / +47 40 43 67 98	

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

A-sized single cell contains 0.96 gram Lithium metal content

Hazardous Ingredients *(specific)*	%	CAS Number	LD $_{50}$ of Ingredient *(specify species and route*	LC $_{50}$ of Ingredient *(specify species)*
Two SAFT 2S1P LS17500 battery packs.				
Litium (Li)	3,5 – 5 %	7439-93-2		
Thionyl chloride *(SOCl2)*	40-46 %	7719-09-7		
Aluminum chloride anhydrous *(AlCl3)*	1-5 %	7446-70-0		
Carbon *(Cn)*	3-4%	1333-86-4		

SECTION 3 — HAZARDS IDENTIFICATION

Route of Entry ❒ Skin Contact ❒ Skin Absorption ❒ Eye Contact ❒ Inhalation ❒ Ingestion

[Emergency Overview]

[WHMIS Symbols]

Potential Health Effects

This product contains Litium-Thionyl chloride batteries. Avoid mechanical damage to the product or environmental conditions outside the limits described in the datasheet. Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. The Lithium-Thionyl chloride batteries described in this Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the batteries with the electrode materials and liquid electrolyte they contain are not exposed to the outside, provided the product integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage, electrode materials reaction.

SECTION 4 — FIRST AID MEASURES

In case of mechanical damage to the product batteries may be exposed and damaged.

Skin Contact: Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention.

Eye Contact: Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.

Inhalation: Remove from exposure, rest and keep warm. In severe cases obtain medical attention.

Ingestion: Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention

SECTION 5 — FIRE FIGHTING MEASURES

Flammable ❒ Yes ❒ No	If yes, under which conditions?	
Extinguishing media: Use water or CO2 on burning Li-SOCl2 cells or batteries and class D fire extinguishing agent only on raw lithium. The batteries are contained in a fire enclosure with UL94 V0 rating.		
Flashpoint (° C) and Method	Upper Flammable Limit (% by volume)	Lower Flammable Limit (% by volume)
Autoignition Temperature (°C)	Explosion Data — Sensitivity to Impact	Explosion Data — Sensitivity to Static Discharge
Hazardous Combustion Products		
[NFPA]		

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Leak and Spill Procedures
Remove personnel from area until fumes dissipate. Do not breathe vapors or touch liquid with bare hands. If the skin has come into contact with the electrolyte, it should be washed thoroughly with water.
Sand or earth should be used to absorb any exuded material. Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.

SECTION 7 — HANDLING AND STORAGE

Handling Procedures and Equipment
In case batteries in the product should be exposed: Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat o solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non - conductive (i.e. plastic) trays.
Storage Requirements
Store in a cool (preferably below 30°C) and ventilated area, away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 100°C may result in battery leakage and rupture. Since short circuit can cause burns, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits ❒ ACGIH TLV ❒ OSHA PEL ❒ Other *(specify)*
Specific Engineering Controls *(such as ventilation, enclosed process)*
Personal Protective Equipment ❒ Gloves ❒ Respirator ❒ Eye ❒ Footwear ❒ Clothing ❒ Other
Respiratory protection: In all fire situations, use self-contained breathing apparatus.
Hand protection: In the event of leakage wear gloves.
Eye protection: Safety glasses are recommended during handling.
Other: In the event of leakage, wear chemical apron.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Odour and Appearance: Cylindrical or prismatic shape. If leaking, gives off a pungent corrosive odour.	Odour Threshold (ppm)
Specific Gravity	Vapour Density (air = 1)	Vapour Pressure (mmHg)
Evaporation Rate	Boiling Point (° C)	Freezing Point (° C)
pH: Not applicable	Coefficient of Water/Oil Distribution	[Solubility in Water]

SECTION 10 — STABILITY AND REACTIVITY

Product is stable under conditions described in Section 7. Conditions to avoid: Heat above 100 (150°C for the LSH 20-150 cells and the battery packs assembled from them) or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Recharge. Short circuit. Expose over a long period to humid conditions.

Materials to avoid: Oxidising agents, alkalis, water. Avoid electrolyte contact with aluminum or zinc.

Chemical Stability ❒ Yes ❒ No	If no, under which conditions?
Incompatibility with Other Substances ❒ Yes ❒ No	If yes, which ones?

Reactivity, and under what conditions?

Hazardous Decomposition Products

SECTION 11 — TOXICOLOGICAL INFORMATION

Sign & symptoms: None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

Effects of Acute Exposure	
Effects of chronic exposure	
Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.	
Irritancy of Product	
Skin sensitization	Respiratory sensitization
Carcinogenicity-IARC	Carcinogenicity - ACGIH
Reproductive toxicity	Teratogenicity
Embrotoxicity	Mutagenicity
Name of synergistic products/effects: None	

SECTION 12 — ECOLOGICAL INFORMATION

Aquatic Toxicity: None known if used/disposed of correctly.

SECTION 13 — DISPOSAL CONSIDERATIONS

Waste Disposal: Do not incinerate, or subject cells to temperatures in excess of 100°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

SECTION 14 — TRANSPORT INFORMATION

The batteries in this product does not contain more than 2 gram of lithium and each cell does not contain more than 1 gram of lithium. This product contains a total of two batteries. This product contains a total of 4 cells. The total weight of each cell is 21.9 gram. The total weight of all the batteries in each HPL-2 is 87.6 gram.

Since the battery passes the UN-defined transport test, and thanks to its lithium content below 1 gram limit, the LS 17500 cell in all its finished versions, according to the current UN Recommendations on the Transport of Dangerous goods – Model regulations, is declared exempt from Dangerous Goods regulations. It is non-restricted to transportation/non-assigned to Class 9, providing packed in accordance with Clause 188 of the above mentioned UN Recommendations on the Transport of Dangerous Goods, Model Regulations.

SECTION 15 — REGULATORY INFORMATION

Special Shipping Information: UN 3091 section II (cells and batteries *contained in equipment* or *packed with it*).
Lithium Metal batteries are contained within this equipment. See section 14 for a description of transportation precautions that may apply.

	PIN
TDG	[DOT]
[IMDG]	[ICAO]

OSHA: See exposure limits of the internal ingredients of the battery in Section 8	
[WHMIS Classification]	
[SERA]	[TSCA]

SECTION 16 — OTHER INFORMATION

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

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